***Physics-Big Ideas***

-Electricity is a form of energy produced from a variety of non-renewable and renewable sources. costs and benefits, application, efficiency/savings

-The production and consumption of electrical energy has social, economic, and environmental implications.

-Static and current electricity have distinct properties that determine how they are used. properties, principles, circuits (V, I, R relationship)

Terms:

ammeter,amperes, battery, current, fuse, kilowatt hours, load, ohms, potential difference, resistance, switch, voltmeter,and volts, static, current, insulator, conductor, conductivity, circuit, series, parallel, current, potential difference, resistance, load, resistance, electrical energy, alternating current and direct current (AC or DC), ammeter, voltmeter, multimeter

1) Technological device that uses static electricity

2) Renewable and non-renewable sources of electrical energy

3) Energy consumption at home

4) Static electricity –friction, contact, and induction to make static charge

5) Insulators or conductors -predict conductivity (metals, glass, plastic, water)

6) Circuits –series, parallel, meters, relationship between V, I, R (V=IR)

7) Energy consumption

Activities:

Source: http://stao.ca/res2/elw/L12.php

1) Group Activity - People Conductors with Energy Ball

2) Circuit Theory with Wooden Block Model-light bulb, ammeter, voltmeter, switch

3) Parallel Circuit- Styrofoam cup demo with holes

4) Different Energy Sources Renewable/Non Renewable: <http://kids.everykilowattcounts.com/en/index.html>

5) Squishy Circuits-use playdough to make your own simple circuits: <http://courseweb.stthomas.edu/apthomas/SquishyCircuits/>

6) Energy Ball-A ball with two small metal electrodes that flashes and makes a sound shows that humans are conductors of electricity

<http://www.youtube.com/watch?v=qAIUQSDKxlo>

http://www.youtube.com/watch?v=pgT\_9a5jMqM&feature=related

7) Plasma ball- emits a high frequency, high voltage electromagnetic field-can make a light bulb circuit this works via static electricity. A transformer in the base of the unit creates a huge negative charge on a metal ball that's inside a glass dome. The charge almost instantly builds up to the point where electrons are flowing from the ball to the inside of the glass. If you touch the glass, the charge will be attracted to the point where your hand touches the glass. The glass dome is filled with inert gasses at low pressure; these gasses react to the flowing electrons allowing us to see the charge as bluish-white "streamers".

Science Bob- http://www.youtube.com/watch?v=-Ekl42BnNrg

8)Static Electricity- mark an x on the balloon-stick to the wall-excess charge is localized

9) Test conductivity of water (distilled) vs. in the palm of your hand

10) Website: <http://www.andythelwell.com/blobz/>

11) Static electricity demonstration with ruler

<http://www.youtube.com/watch?v=QxZ6AWLpnUw>

12) Science Bob –Van de Graaf

<http://www.youtube.com/watch?v=T0J5q43MSw8>

13) Science Bon – Levitating Orb

14) Potato Battery: <http://www.youtube.com/watch?v=ufoOJfzro2c&feature=related>

15) Lemon battery: <http://www.youtube.com/watch?v=p3qXpqgaszs&feature=related>

16) Charge your I phone

<http://www.youtube.com/watch?v=PuiPDBA3XZI&feature=related>

17) Steve Spagler Electricity

<http://www.stevespanglerscience.com/experiments/026>